

REMARKS

The office action of September 26, 2005 has been reviewed and its contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 1 through 4 remain in this case.

The Applicant acknowledges the provisional obviousness-type double patenting rejections and will respond at a later date.

Rejection(s) under 35 U.S.C. §103

Claims 1-4 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bergkvist et al.

Applicant respectfully disagrees. The Examiner states in the present office action, "Applicant has not shown the prior art ram speed does not result in a pressure that anticipated or approximates that of Applicant. As Applicant is aware, the PTO has no ability to show otherwise, thus, when a reasonable assertion is made that the prior art discloses the claimed limitation inherently, the burden is upon the Applicant to provide a showing, not mere argument, otherwise."

The Examiner has to provide rational or evidence tending to show that a reasonable assertion can be made based on Bergkvist et al. that a ram speed of above 2m/s would result in Applicant's compaction pressure, or that such a pressure would be inherent in the specification of ram speed. The Examiner has not done so. The fact that a certain result or characteristic *may* occur or be present in the prior art is not sufficient to establish the inherence of that result or characteristic *In re Rijckaert* (28 USPQ2d 1955). Furthermore, "to establish inherence, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson* (49 USPQ2d 1949).

Bergkvist et al. uses high velocity compaction (HVC) where the density of the compacted product is controlled by the impact energy transferred to the powder, namely a ram speed of

above 2m/s. Bergkvist et al. also goes on to states that "no straight equivalence exists between compaction pressure in a conventional press and the ram speed" (paragraph 0016). The Examiner is asking the Applicant to provide an equivalence *which the reference cited specifically states is not present*.

High velocity compaction (HVC) employs a ram which has a discreet mass and is accelerated to a predetermined speed to compact the powder by an energy shockwave. Conventional compaction is force or position controlled through hydraulic cylinders or other drives to provide static compaction of the powder. As shown by newly cited reference entitled "High Velocity Compaction Mans High Performance Parts," HVC employs an impact force which is categorized in impact energy and not tons, as is customary with conventional compaction.

For conventional compaction:

Force equals the product of pressure and area $F = pA$. A time component is not factored in since the compaction or force that results is static. Therefore, any change of force over time is zero $\frac{dF}{dt} = 0$.

For high velocity compaction:

Force equals the product of mass and acceleration $F = ma$. Acceleration includes the change of velocity over time and would not equal zero $\frac{dv}{dt} \neq 0$. The force that results from HVC is an energy shockwave that will vary with respect to time.

The force that results from a static compaction does not change over time and cannot be compared or converted to a force that varies over time. The only comparison that would be possible, but would be wholly inaccurate, is to choose a specific time in which a velocity results in HVC and compare it to the static force of conventional compaction. The numbers would vary based on what time is chosen. Therefore, a comparison or ram speed in HVC cannot be compared to the pressure in conventional compaction.

The comparison the Examiner is asking the Applicant to make is similar to fixed speed (compaction) versus acceleration (ram speed). As an analogy, in the movie "Back to the Future," it was discovered that at 83 mph a DeLorean would leap into the future. Suppose that in the spec sheet for the DeLorean the acceleration of the car is stated to be "0 to 60 mph in 5 seconds." It is possible that, having reached 60 mph in 5 seconds, you could then go on to reach the 83 mph, and thus leap into the future, but nothing in "0 to 60 mph in 5 seconds" teaches or suggests that driving at 83 mph or that the car will leap into the future at that specific speed. In other words, it is not inherent in the specification that the car goes from 0 to 60 mph in 5 seconds and that at 83 mph the car will leap into the future.

In summary, Bergkvist teaches that in order to obtain high density end products, high velocity compaction (HVC) is necessary. Applicant compresses the metallurgic powder at a pressure of 35 to 65 tsi to provide a green compact (emphasis added). There is no relationship that can be accurately compared between these two statements as Bergkvist itself says and physics shows.

In regards to the percentage of silicon in the metallurgic powder, 0.5 weight percent is the dividing line between Applicant's invention and Bergkvist which requires at most 0.5 weight percent silicon. The ranges are disjointed. The "at most 0.5% by weight of Si" does not teach or suggest greater than 0.5 weight percent silicon. However, in order to further prosecution, Applicant has amended the silicon range to be 0.6 to 5.0 weight percent silicon.

Regarding claim 3, Bergkvist states, "The method according to the invention permits manufacture of green and sintered compacts having high density such as densities above 96 or even about 98% of the theoretical density...corresponds to densities above 7.25, 7.3 and even 7.35g/cm^3 ." (see paragraph [0022]) Bergkvist's compacts have the high density due to the specific use of high velocity compaction (HVC). Applicant's dependent claim 3 states "wherein the step of compressing the metallurgic powder produces a compact with a density of 6.0g/cc to 7.0 g/cc" which is less than the required 7.25g/cc of Bergkvist. From the density of the compact, the theoretical density of Applicant's compact is 75% to 95%. The Applicant, as stated above does not use high velocity compaction (HVC).

Therefore, it is respectfully suggested that the rejection of independent claim 1 as being obvious in view of Bergkvist et al. (US 2003-0033903) is overcome. Dependent claims 2-4, being dependent upon and further limiting independent claim 1, should also be allowable for that reason, as well as for the additional recitations they contain. Reconsideration and withdrawal of the rejection are respectfully requested.

Conclusion

Applicant believes the claims, as amended, are patentable over the prior art, and that this case is now in condition for allowance of all claims therein. Such action is thus respectfully requested. If the Examiner disagrees, or believes for any other reason that direct contact with Applicants' attorney would advance the prosecution of the case to finality, he is invited to telephone the undersigned at the number given below.

"Recognizing that Internet communications are not secured, I hereby authorize the PTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file."

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Dated: December 12, 2005